



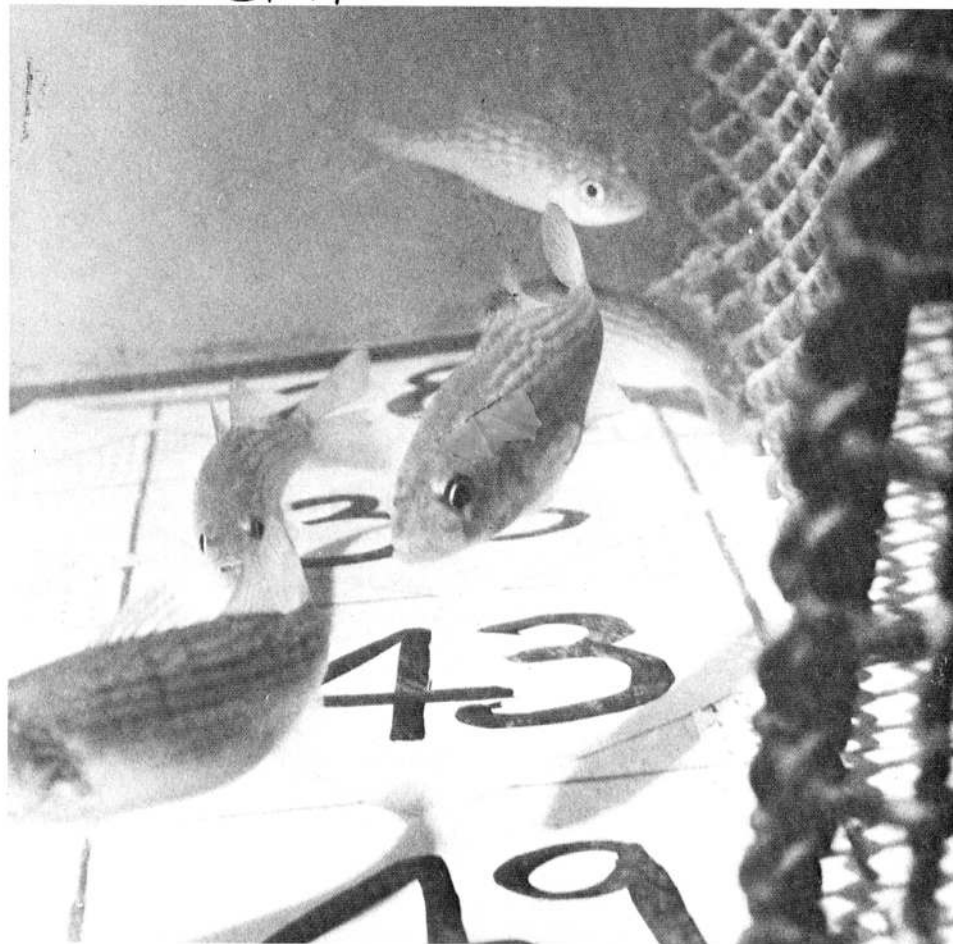
# NUCLEAR DIVISION NEWS

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 7, No. 1

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3194-75



**LABORATORY TESTS** — In addition to the threadfin shad, other fish species are being studied at the ORNL aquatic ecology laboratory to determine their ability to avoid being impinged on cooling water intake screens at power plants. Stripped bass are tested above in a large circular tank containing sections of screen through which water is pumped at velocities similar to those created by power plant intakes. The numbered grid on the bottom of the tank is used to determine the area covered by the fish during an activity period.

## QUESTION BOX



**QUESTION:** As our economy expands its utilization of woman-power, additional ways must be found to fill the gap between what is available in child care and what is needed. It is hoped that industry, which clearly has a stake in this, will accept responsibility to help solve the problem. With this in mind, why would it not be possible for each of the local plants to have day-care centers for working mothers?

**ANSWER:** In 1972, women employees in the Nuclear Division between 18 and 40 years of age were questioned about day care needs for children. Seventy-six percent of the women responded and their answers showed that their child care needs were being met by several means: sitter at home; relative; sitter outside home; day care center. Costs per week then ranged from \$13 to \$22 per week. After receiving your question, we called the five day care centers operating in Oak Ridge. Three of the five had openings for additional children (including babies). At three of the centers, payment for child care depends upon the financial situation of the parent or

guardian and maximum cost is about \$25 per week. Three provide transportation for the child to and from the center. We did not check centers in Anderson and Knox Counties, but presumably the same range of services is provided. Community needs are apparently being met by existing community resources.

**QUESTION:** When an employee of UCND is transferred from ORNL, Y-12, or ORGDP to another of these installations they can, as of August 1, 1975, continue to have payroll deductions to their original credit unions. Why can't those who transferred earlier not be given the same option?

**ANSWER:** At the time this change was made, the question you raise was considered. It was determined that this would be too burdensome and that it would be all but impossible to draw a time line that would be practical and fair. Many of our transfers date back to the 1940's and there are many with several transfers, some to each of the plants in the Nuclear Division. You may, of course, make direct (please turn to page eight)

## Cooperative study on fish impingement conducted by ORNL, TVA researchers

Oak Ridge National Laboratory researchers are conducting a cooperative study with the Tennessee Valley Authority on the susceptibility of the threadfin shad to impingement (collection) on the cooling water intake screens of electric generating stations.

The threadfin shad, a fragile six-inch-long member of the herring family, is one of the most abundant species in lakes throughout the southeast region. Millions of these fish die each year when they are swept onto the protective screens at TVA power plants.

Although the shad is not an edible game fish, it is a vital link in the aquatic food chain of many sport fish.

### Most die in winter

Previous observations have indicated that most of the mortality of these fish occurs during the winter. This has led to a study, at ORNL, of the behavior and swimming ability of shad in cold water, to determine whether they are already in a sluggish condition or near death before they come in contact with the intake screens.

The ORNL research, which is being conducted in the Environmental Sciences Division's aquatic ecology laboratory, has been investigating the effects of cold temperatures on the shad in conjunction with TVA field studies at each of its power plants. This ecological research laboratory, the first facility of its kind in the southeast, was established at ORNL in 1973 to study the effects of power plant operation on aquatic life.

Although tests are continuing, preliminary results indicate that most impinged threadfin shad are already suffering from cold shock when they contact the intake screen. These results were presented at a meeting of the Southern Division of the American Fisheries Society in October, 1975.

### Laboratory tests

Threadfin shad involved in the laboratory tests were taken from the

nearby Clinch River and tested at water temperatures varying from just above freezing to approximately 80 degrees F. The fish were placed in a narrow flume closed off by sections of intake screens, through which water was pumped. Measurements were made of the shad's ability to swim, without impingement, in a current similar to that at the intake of TVA power plants.

Above approximately 54 degrees F, little mortality was observed in test fish. After exploring the intake screen area, they attempted to swim upstream and leave the vicinity of the screen. This suggests that impingement of adult threadfin shad may occur at these water temperatures, only if they are trapped by physical features of the intake structure or its associated environment (such as turbulence or turbidity) and cannot find a means of escape.

Impingement reached 100 percent for groups tested at 47 and 44 degrees F, and occurred primarily during the first 60 minutes of the two-hour tests. None of the threadfin shad tested survived even brief impingement; although some were alive when removed from the screen, they were not capable of recovery.

### Monitoring at plants

Samples of fish impinged at 12 coal-fired steam plants were collected weekly by TVA personnel. Collections were also made three times each week at the Browns Ferry nuclear plant.

This monitoring indicated threadfin shad accounted for 72 percent of the numbers of all fish impinged at the plants. The number of impinged shad varied greatly with the season.

Data collected at five TVA coal-fired plants indicated the existence of a strong relationship between rate of impingement and low water temperature; about 90 percent of the shad were impinged when temperatures were below 50 degrees F. Impingement of shad at seven other coal-fired plants appeared to be only partially related, or completely unrelated, to low temperatures.

### Impingement cycle

Results of the more intensive sampling at the Browns Ferry nuclear plant, when combined with Laboratory studies, suggests a hypothetical annual threadfin shad impingement cycle which depends largely on the size of the fish and the yearly temperature pattern. Impingement is high during early summer following the spawning season, when due to their small size and/or behavior patterns the young shad appear to be incapable of avoiding impingement.

Low impingement follows for the next several months when the water is (please turn to page eight)

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## Thermal Shock Test Facility used in crack growth study

A new experimental facility, the Thermal Shock Test Facility (TSTF), has gone into operation at Oak Ridge National Laboratory to provide a method of studying growth of cracks in cylindrical steel vessels subjected to severe thermal shock.

These experiments are being conducted as part of the Laboratory's Heavy Section Steel Technology Program for the U.S. Nuclear Regulatory Commission. The tests are designed to help assess the margin of safety inherent in the large pressure vessels used in light-water reactors. They are directed toward providing data that can be used to evaluate whether or not an otherwise insignificant flaw in the vessel wall will propagate if the vessel is subjected to the thermal shock associated with injection of the emergency core coolant. Results of the various tests are expected to be useful in developing construction standards for future pressure vessels and may alter operating procedures for some existing light-water reactors.

The Thermal Shock Test Facility provides a means of heating a test specimen, containing a man-made flaw, to a high temperature (approximately 550° F) and then suddenly subjecting the specimen to a high-velocity, low-temperature coolant (down to approximately minus 10° F). Since the test specimens are unirradiated, the low temperature is

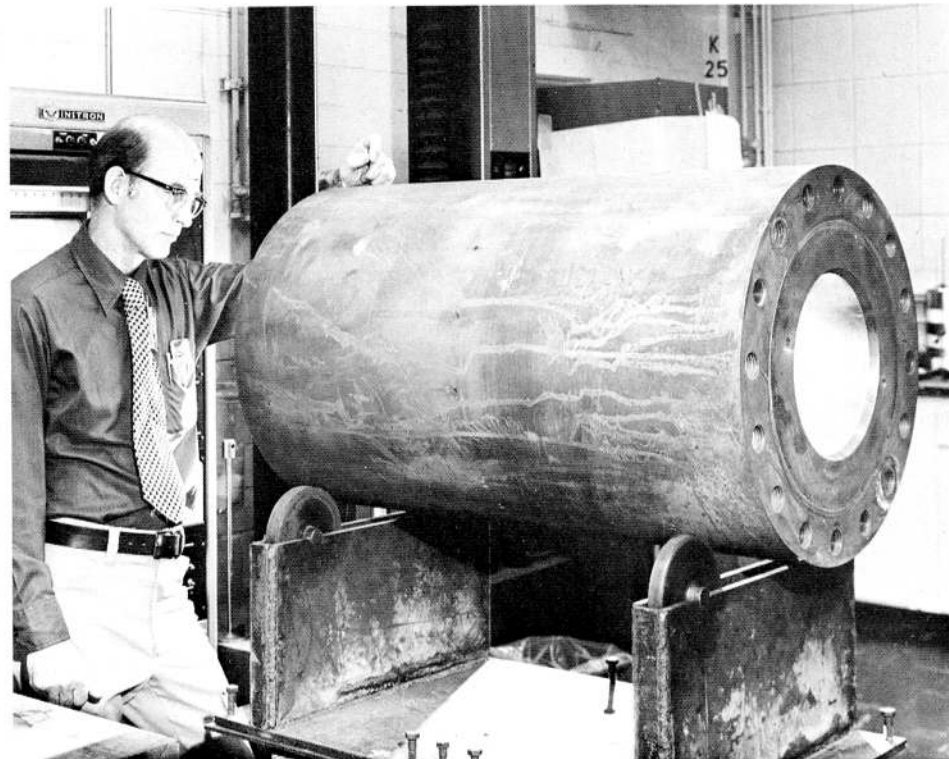
used to simulate the irradiated condition of a reactor vessel. This temperature is much lower than any to be expected in a reactor. Instruments attached to the specimen record temperature and stress distributions during the transient and also detect propagation of the flaw.

### Thermal shock conditions

The test specimens are low-alloy steel of the type used in lightwater reactor vessels. They are heat-treated in a special way to reduce the toughness of the material and, to some extent, simulate radiation damage effects. Specimens being used at the present time are 36 inches long, have an outside diameter of 21 inches, a wall thickness of about 6 inches, and weigh about 3,000 pounds.

In the first recently completed test, the initial flaw was approximately one-half-inch deep and extended the full length of the specimen. The thermal shock conditions — initial specimen temperature of 550° F and coolant temperature of 40° F — were such that propagation of the flaw was not expected and was not directed.

For the next experiment, soon to get underway, a mixture of alcohol and water will be used to permit the coolant to be lowered to a temperature of minus 10° F. The initial flaw will be a semicircular crack three-fourths-inch deep. In this case, extension of the flaw is expected.

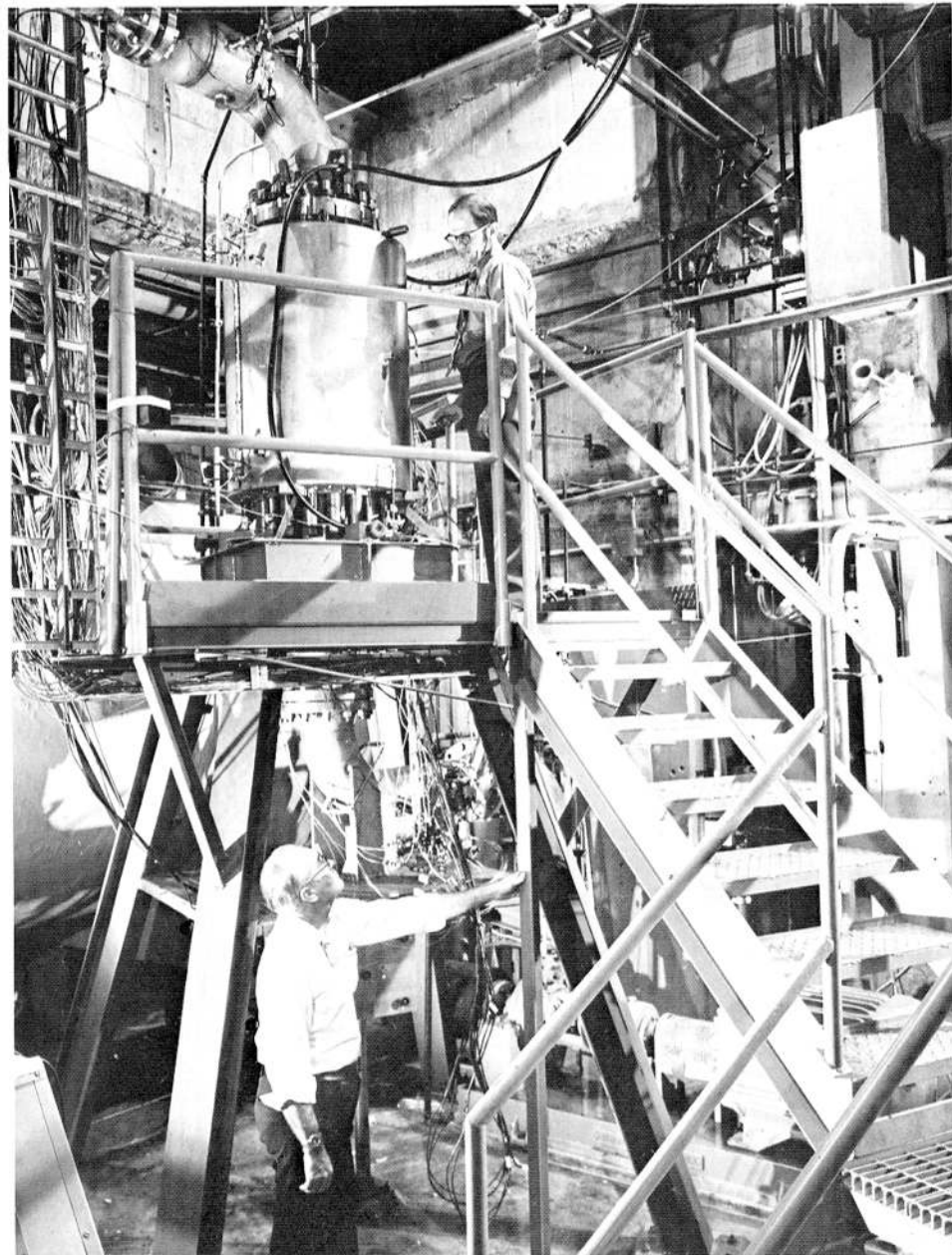


3,000 POUND SPECIMEN — Richard D. Cheverton, who directs the Thermal Shock Program, looks at one of the 3,000 pound specimens to be used in a future test.

Richard D. Cheverton, who directs the Thermal Shock Program explained, "These experiments are not aimed at proving directly that cracks will or will not propagate in actual nuclear reactor pressure vessels, because the scaling factors between our small test specimens and actual reactor vessels are too large. What we intend is to determine the accuracy of the calculational techniques and then extrapolate to the larger vessels."

Other Reactor Division personnel involved in the program include Sam E. Bolt, J. Howard Butler, Tom A. King, P. P. Holz, John G. Merkle, Grover C.

Robinson and Jack E. Smith. Carl B. Smith of the Engineering Division was responsible for equipment design; Tom M. Cate and Jack W. Krewson of the Instrumentation and Controls Division were responsible for test facility instrumentation; and Domenick A. Canonico of the Metals and Ceramics Division was responsible for metallurgical studies. Peter Ying of Southwest Research Institute is a consultant who evaluates crack propagation via the acoustic emission method. Grady D. Whitman of the Reactor Division heads the Heavy Section Steel Technology Program.



EXPERIMENT APPARATUS — Sam Bolt, above, and Tom King inspect the Thermal Shock Test Facility apparatus in Building 9204-1 prior to a test. The test specimen is mounted on its stand directly in front of Bolt.

## COMPANY Service

20 25 30

### ORGDP 30 YEARS

Leon A. Owens, physical measurements department; Gerald W. Lay, Engineering Division; Luther M. Poe, building maintenance department; John H. Battle, power and utility maintenance; William D. McCluen, U-235 separation department; Joe H. Fletcher, development maintenance; Charles D. Edmundson, power and utility maintenance; Joe P. Harvey, Engineering Division; Albert J. Edmonds, mechanical utilities maintenance; Thomas O'Daniel, grounds maintenance department; Joseph H. Henderson, TIA barrier manufacturing; and Charles F. Swaggerty, chemical operations administration.

### 25 YEARS

Ralph C. Kinnamon, Sheldon C. Jacobs, William H. Taylor and Troy C. Trotter.

### 20 YEARS

Arthur H. Rice.

### GENERAL STAFF 30 YEARS

William D. Gooch, Purchasing Division.

### 25 YEARS

Marjorie H. Gardner and Paul E. Scott.

### 20 YEARS

Elmon Leach (November 27), William A. Brickey Jr. (November 28),

Mildred M. Clark and Robert V. Fehling.

### PADUCAH 30 YEARS

Elvin E. Kuehn, instrument maintenance.

### 20 YEARS

Joe T. King.

### Y-12 PLANT 30 YEARS

Philip S. Lewis Jr., development operations; Clyde W. Clower, office services department; James W. Emch, buildings, grounds and maintenance shops; Manuel H. Clayton, general shops; James B. Soward, development operations; Nelson H. Bethea, production services; John Sewell, machine maintenance; and Elizabeth C. Johnson, statistical services and SS control.

### 25 YEARS

William K. Whitson Jr., Joseph Pryson, Charles F. Peterson, Jessie E. Johnston, Warner L. Taylor Jr., Howard Garrison, Charles S. Scarbrough, Newell M. Standridge, Garvin R. Stephenson, Thomas J. Lewis, Chelton T. Bunch, William A. Kramer, Curtis A. Duff, William P. Campbell, Tillman B. Phillips and George B. Borella.



# Assessment center concept effective at ORGDP

The "Assessment Center" concept of management selection has proved itself a very effective tool in objective selection of managers at the Oak Ridge Gaseous Diffusion Plant.

The Assessment Center approach, which has been used at ORGDP on a limited scale since 1968, provides a consensus of each candidate's potential by six trained evaluators. Each candidate is judged on a number of fixed characteristics that every supervisor should possess. These include oral and written communication skills, the ability to get along with others, leadership, and perception.

Using the same criteria for evaluating each potential supervisor helps eliminate most of the inconsistencies seen in some of the other forms of supervisor selection.

Since its inception, 68 panels have assessed approximately 400 candidates at the Gaseous Diffusion Plant. Although the Assessment Center principle has remained the same, some refinements have been incorporated.

## Voluntary basis

A person is nominated for the Assessment Center when he or she demonstrates supervisory potential. A justification is initiated by the immediate supervisor with the approval of the employees, since the program is strictly voluntary. The justification requires the approval of all levels of supervision through the



**ASSESSMENT CENTER** — A very effective tool in objective manager selection is being used at the Oak Ridge Gaseous Diffusion Plant. Seen at a recent meeting are the current members, from left, Jerry Upchurch, Dave White, Fran DeLozier, Marcus Martin, Harold Conner and Ray Koteski.

division manager. The justification and review insure that employee nominations are not left to the discretion of a single supervisor.

Even if one does well on the Assessment Center, that is not a guarantee of immediate promotion! The Center results are among several criteria used to get as true an evaluation of the individual as possible. More important is that if the candidates do poorly their present status is unaffected. They can work to improve themselves. In other words, their success depends on their own effort.

The Assessment Center approach has contributed to an increased opportunity for women and minorities to be placed in supervisory positions since the criteria of management potential in the Center does not include race or sex as a factor.

## Trained evaluators

The evaluators are specially trained individuals, usually a line manager responsible for selecting supervision, or a staff specialist with management-related responsibilities. Currently this group includes three minority and four women evaluators.

The operation of an individual panel is an all-day session including controlled exercises designed to bring out the characteristics and potential a person may have for supervision. A session is composed of six candidates with six evaluators to observe. There is another half day involved by the evaluators to consolidate their findings into a mutually agreed upon evaluation of each candidate.

The Assessment Center is not perfect. However, improvements are constantly being implemented in an attempt to get the best supervisors for ORGDP.

## DIVISION RETIREES



M. W. Chadwell



C. Cole



W. R. McKnight



G. E. Pearson



E. E. Kennedy



E. L. Kennedy



C. R. Henson



W. F. Leggitt



C. Stone



L. P. Riordan

Eight more employees were among Oak Ridge National Laboratory's December 31 retirees. All eight took early retirement.

Milton W. Chadwell retired from his position as a sheet metal foreman in Plant and Equipment Division. An employee since 1943, he lives at Route 3, Box 245, Crossville.

Coleman Cole, a janitor in Operations Division, also joined the Laboratory staff in 1943. Cole resides at 220 Wilberforce Avenue, Oak Ridge.

Corinne R. Henson was a health physics technician in Health Physics Division. A 28-year employee, she lives in Lake City.

William F. Leggitt retired after 30 years' company service. A millwright in Plant and Equipment Division prior

to his retirement, he lives at 143 Pembroke Road, Oak Ridge.

William R. McKnight, another 30-year employee, was a utility foreman in Operations Division. His home is at 147 Hamilton Circle, Oak Ridge.

George E. Pearson marked 31 years' company service before his retirement. He was an electrician in Plant and Equipment Division and resides at 2013 West Woodrow Drive, Knoxville.

Lawrence P. Riordan, former head of Laboratory Protection, came to the Laboratory in 1943. His home is at 99 Oklahoma Avenue, Oak Ridge.

Charles Stone was a janitor in Operations Division. A 21-year Laboratory veteran, he lives at 1220 Moses Street, Knoxville.

A husband-and-wife team retired from the Y-12 Plant last month, both marking long careers with Union Carbide. Ernest E. Kennedy, Product Engineering; and Edna Leonard Kennedy, nondestructive testing department, both chose early retirement in December. He joined the Y-12 work force in 1944, she in 1950. They live at Route 17, Melton View Lane, Knoxville.



D. B. Rains

David B. Rains, plastic shop in the Maintenance Division at the Oak Ridge Gaseous Diffusion Plant, retired at the end of December. He joined Union Carbide in 1944 and lives at Route 3, Kingston.

## Wayland named foreman at ORGDP



G. S. Wayland

Gregory S. Wayland has been promoted to a maintenance foreman in the Fabrication and Maintenance Division at the Oak Ridge Gaseous Diffusion Plant.

A native of Knoxville, he has been at ORGDP almost two years. Prior to that time, he was with the Modern Supply Company. He attended The University of Tennessee.

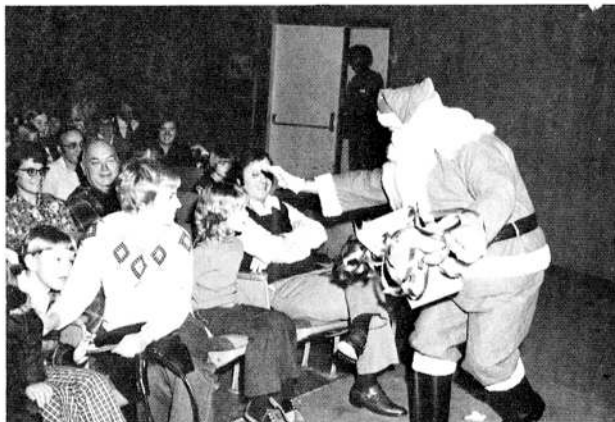
Mrs. Wayland is the former Betty Jo Miller, and the couple lives at 112 Ida Hertzler Lane, Concord. They have one child.

## PATENTS GRANTED

To William J. Hulsey, Y-12 Plant, for "Method for Treating Reactive Metals in a Vacuum Furnace."

To Carlos E. Bamberger and Warren R. Grimes, both of ORNL, for "Thermochemical Production of Hydrogen."





*HORDES FLOCK TO PARTIES — Union Carbide children by the hundreds flocked to the big parties held December 23 at the Oak Ridge High School. Bill Hicks emceed the festivities, with a magic show by Austinini. There were marionettes, animated cartoons in the festive spirit, and, of course, a visit from the "jolly old elf" himself. An additional party was added at 5 p.m. due to the demand for tickets, as youngsters from the area flooded the doors to delight in the holiday moods. Old Santa, impersonated by T. A. Williams, was an added delight for the happy children.*





## History of Social Security Taxes

### Tax Rates

| Year           | Pension Rate | Hospital Insurance Rate | Combined Rate | Tax Base | Maximum Annual Tax Employer-Employee Each |
|----------------|--------------|-------------------------|---------------|----------|-------------------------------------------|
| 1937-49        | 1.0 %        |                         |               | \$ 3,000 | \$ 30.00                                  |
| 1950           | 1.5          |                         |               | 3,000    | 45.00                                     |
| 1951-53        | 1.5          |                         |               | 3,600    | 54.00                                     |
| 1954           | 2.0          |                         |               | 3,600    | 72.00                                     |
| 1955-56        | 2.0          |                         |               | 4,200    | 84.00                                     |
| 1957-58        | 2.25         |                         |               | 4,200    | 94.00                                     |
| 1959           | 2.5          |                         |               | 4,800    | 120.00                                    |
| 1960-61        | 3.0          |                         |               | 4,800    | 144.00                                    |
| 1962           | 3.125        |                         |               | 4,800    | 150.00                                    |
| 1963-65        | 3.625        |                         |               | 4,800    | 174.00                                    |
| 1966           | 3.85         | .35%                    | 4.2%          | 6,600    | 277.20                                    |
| 1967           | 3.9          | .5                      | 4.4           | 6,600    | 290.40                                    |
| 1968           | 3.8          | .6                      | 4.4           | 7,800    | 343.20                                    |
| 1969-70        | 4.2          | .6                      | 4.8           | 7,800    | 374.40                                    |
| 1971           | 4.6          | .6                      | 5.2           | 7,800    | 405.60                                    |
| 1972           | 4.6          | .6                      | 5.2           | 9,000    | 468.00                                    |
| 1973           | 4.85         | 1.0                     | 5.85          | 10,800   | 631.80                                    |
| 1974           | 4.95         | .9                      | 5.85          | 13,200   | 772.20                                    |
| 1975           | 4.95         | .9                      | 5.85          | 14,100   | 824.85                                    |
| 1976           | 4.95         | .9                      | 5.85          | 15,300   | 895.05                                    |
| 1978-80        | 4.95         | 1.1                     | 6.05          |          |                                           |
| 1981-85        | 4.95         | 1.35                    | 6.30          |          |                                           |
| 1986-2010      | 4.95         | 1.5                     | 6.45          |          |                                           |
| 2011 and after | 5.95         | 1.5                     | 7.45          |          |                                           |

NOTE: Since January 1, 1975, the tax base rises automatically to keep in step with the Consumer Price Index.

### Organizational meeting Jan. 13

## Society of Women Engineers plans formation of East Tennessee section

Nuclear Division women in East Tennessee with engineering degrees or who are involved in engineering-related work are invited to attend the organizational meeting of a new East Tennessee section of the Society of Women Engineers. The meeting will be held at 7:30 p.m. Tuesday, Jan. 13., at 504 Valparaiso Road, Oak Ridge.

The Society of Women Engineers (SWE) is a professional, non-profit, educational service organization of graduate women engineers and women with equivalent engineering experience. Tennessee has never had an SWE section, although there are 11 members-at-large within the state, five of whom are in the Oak Ridge-Knoxville area.

#### Inform women of opportunities

Specific objectives of the Society are:

- To inform young women, their parents, counselors and the general public of the qualifications and achievements of women engineers and the opportunities open to them;
- To assist women engineers in readying themselves for a return to active work after temporary retirement;
- To serve as a center of information on women in engineering, and
- To encourage women engineers to attain high levels of educational and professional achievement.

Membership is open to women on three levels — senior member, member, or associate member — based on educational qualifications and experience.

#### Carbide sponsors award

Union Carbide Corporation is one of 35 corporate members in the SWE, which has an international membership of about 3,000 women. Carbide also sponsors one of the several SWE-

administered award certificate programs. The SWE-Union Carbide Best Student Section Awards are presented to outstanding SWE Student Sections for their efforts in fulfilling the SWE goals.

The Society also administers a variety of scholarship programs.

Women who are interested in attending the organizational meeting or who have questions about membership requirements or other facets of the SWE should call Kathleen Harer of ERDA's Safety and Environmental Control Division, 3-4266 or 483-0932 in the evenings.



### WANTED

#### ORGDP

RIDE or WILL JOIN CAR POOL from West Haven, Cumberland sections, Knoxville, to Portal 5, straight day. E. R. McNeal, plant phone 3-3550.

WILL JOIN CAR POOL from Caryville, Jacksboro, LaFollette areas to any portal, straight day. John Richardson, plant phone 3-9372, home phone 562-6939.

#### Y-12 PLANT

RIDE from Tacora Hills section, Clinton, to East Portal, J Shift. William Rollen, home phone Clinton. 457-2433.

The next issue will be dated January 22. The deadline is January 14.

# Social Security rates continue upward spiral

Social Security recently celebrated its 40th birthday. It was August 14, 1935, that President Franklin D. Roosevelt signed the bill beginning a new era in social planning. He termed it "a law which will give some measure of protection to the average citizen and to his family against ... poverty-stricken old age."

In 1935, social security benefits were for retired workers only. Over the years, the law has been amended so that monthly benefits now are paid to eligible retired and disabled workers and their families, and to dependents of deceased workers who worked long enough in jobs covered by social security.

#### Covered increases

Originally, social security covered jobs in commerce and industry only, and about 26,000,000 workers had the protection. Today, more than nine out of 10 jobs are covered, and about 100,000,000 workers and their families have social security protection.

Survivors benefits for dependents of deceased workers were provided for by a 1939 amendment to the law. Disability insurance was added in 1954 to give workers protection against loss of earnings due to disability.

Social security benefits are based on work and earnings. The first benefits were paid to about 222,000 people in 1940. The average monthly payment was about \$22 to a retired worker and \$47 to a widowed mother with two children in her care.

#### Cost of living

Today, social security pays benefits to about 31,000,000 persons. The average monthly payment is around \$202 to a retired worker and \$472 for a widowed mother with two children in her care.

Under a 1972 amendment, social security benefits are now tied to the cost of living. Unless a general social security benefit increase is enacted,

benefits are increased automatically once a year to keep pace with price increases of three per cent or more.

Social security benefits are funded by contributions from workers, employers and self-employed people. For 1976, employees and employers will each contribute 5.85 per cent of the first \$15,300 of earnings from work covered by social security. Self-employed people contribute 7.9 per cent.

The Social Security Administration administers Medicare, which began in 1965, and the supplemental security income program, which began in 1974.

#### Medicare added

Over 23,000,000 persons have Medicare, which helps pay the health care bills of people 65 years of age and over, of disabled people who have been entitled to social security disability benefits for at least 24 consecutive months, and many people with chronic kidney disease.

The supplemental security income program makes monthly payments to more than 4,000,000 persons with little or no income and limited resources who are 65 or over, blind or disabled.

The Social Security Administration is an agency of the U.S. Department of Health, Education and Welfare.

#### 3,000 percent increase

Social security deductions, or F.I.C.A. taxes as they are referred to on our check stubs, have gone up, too. They have increased by almost 3,000 percent in the past two and one-half decades.

For instance, \$30 was all a person paid during an entire year, from the beginning of social security deductions until 1949. In 1950, \$45 was all that was paid in ... then the increases started, and accelerated.

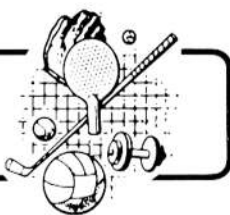
The accompanying table relates the cost of social security through the years.



ORIENTATION PROGRAM — Two Y-12 employees, L. "Buck" Davis, plant records department supervisor, and Will Minter, plant records analyst, presented a records management orientation program recently to the staff of St. Mary's Hospital in Knoxville. They also presented the same program at a joint seminar in Gallatinburg for the National Micrographics Association and the Association of Records Managers and Administrators. The program, "A Systematic Approach to Records Management," has also been requested by the city of Knoxville officials. Minter is seen at left, with Marie Bentley, of the hospital staff, and Davis.



## RECREATIONOTES



### Big bowling bout set for Carbiders for three weekends in February



The All Carbide Mixed Bowling Tournament has set sights on three weekends in February. The handicap race will be staged at Ark Lanes, Oak Ridge, Saturdays and Sundays, February 14 and 15, 21 and 22, and 28 and 29.

Entry blanks are now in the hands of all bowling league secretaries and also may be obtained from the Recreation Department, Building 9711-5, or by phoning them on extension 3-5833. The deadline for entry is Friday, January 16.

Bowlers should indicate first and second choice for preferred dates and times on their entry cards. Shift workers will be given preference in scheduling if there is a conflict with the shift being worked.

#### Fees listed

Participants are limited to one entry in the singles, doubles and mixed doubles events and to not more than three entries in the team event. Fees are \$3 per event ... and an additional \$1 fee is added for bowlers wishing to compete for the All-Events handicap cash prize.

Men's teams must consist of five men, of whom at least three must be members of an existing team in an ABC sanctioned league, or chosen so that the aggregate scratch average of the team does not exceed 850 pins per game. Women's teams will consist of five women, of whom three are members of an existing team in a WIBC sanctioned league, or chosen so that the aggregate scratch average of the team does not exceed 725 pins per game.

#### Directors named

The tournament director is Ray Smith, extension 3-5321. Mabel Tyer

will be office manager for the tournament, and the committee ruling the tournament includes Virginia Johnson, ORNL, extension 3-6661; Bob Crowe, ORGDP, extension 3-3879; and Bill Patrick, Y-12, extension 3-7272.

Teams and mixed doubles will be rolled on Saturdays; with singles and doubles schedule for Sundays, beginning at 12 noon.

Entry fees must accompany the forms when turned in, and each bowler is responsible for his own average to be used in the handicap bowling.

No cash awards will be made on scratch rolling, trophies will be awarded for scratch highs. All prize money will be returned 100 percent to bowlers.

#### Eligibility defined

Participation is limited to employees and spouses, retirees and spouses, and Oak Ridge Associated Universities employees and spouses, with established averages according to tournament rules. Eligible bowlers who are not members of ABC or WIBC may enter the tournament on payment of the pertinent membership fee.

But time's a-wasting! Entry fees and blanks must be in by January 16. See your league secretary or team captain for applications now, or just call the Recreation Office, extension 3-5833. They'll be glad to mail you an entry form.

#### SAVINGS FROM INSULATION

Big savings come from insulating. If your attic needs insulation, putting it in will save up to \$15 each \$100 of your heating bills.

### NUCLEAR DIVISION SAFETY SCOREBOARD

Time worked without a lost-time accident through January 1:

|                  |          |                     |
|------------------|----------|---------------------|
| Paducah .....    | 87 Days  | 790,000 Man-Hours   |
| ORGDP .....      | 106 Days | 2,222,305 Man-Hours |
| Y-12 Plant ..... | 94 Days  | 2,333,094 Man-Hours |
| ORNL .....       | 51 Days  | 1,023,836 Man-Hours |



**MISTLETOE BALL** — Paducah Plant personnel congregated in early December for a gala Christmas dance at the Paducah Civic Center. "The Dynasty" provided music for the holiday clan, which danced from 9 p.m. until the wee hours. The eight musicians played 13 instruments and featured a female vocalist. Highlights of the event are caught in the above shots.

#### ORGDP BOWLING

Congratulations to the Uptowners, who won the ORGDP Women's League as bowling ground to a halt for the holidays. Jennie Jackson's single of 227 handicap, and Mary Johnson's 632 series were highlights of the last night of action.

J. H. Peer, All Stars, showed bowlers a thing or two in mid-December in the Tuesday League. He posted singles of 237 scratch, 258 handicap ... with a series count of 600, 663! The City Slickers keep a one-half point lead, as competition tightens.

Roy Dukes set the lanes afire in the Wednesday League, just before Christmas, with a single of 253, and a series of 632, both handicap counts. The Amps keep a four-point lead away from the Sues Sooners and Hi-Rollers, tied for second place.

#### ALL CARBIDE BOWLING

The Oops team still stands tall in the All Carbide Family Mixed League. Tillie Plaza and C. R. Lively led the pack recently, with series of 562 and 581 respectively.

#### PRESIDENTIAL SPORTS AWARDS

Ralph D. Lawson, ORGDP, was awarded a Presidential Sports patch recently for bicycling. Herman Postma, ORNL, was cited for swimming. Congratulations!

The Recreation Office will assist you in qualifying for a "patch" in the sport of your choice.

#### Y-12 BOWLING

The Rebels were three-point victors in the Classic League, as bowlers rested for the holidays. They finished ahead of the Splinters and will face winners of the second half for the league championship. The Rebels are made up of John Bryan, Ernest Ely, Walt Goodwin, Tom Hillard, Ronnie Jones, Lawrence Sikes and Jack Spears. Harold Zang's 598 scratch series is going to be hard for anyone to best.

The Mini-Strikes emerge as leaders in the C League's second half as they shellacked the Kingpins for the full count. Bob Carmack's big 232 game lead the field on opening night.

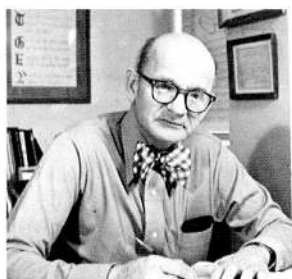
#### HOMEMADE STORM WINDOWS

You can make your own frame storm windows with "furring strip" and plastic sheet.

Use the wood furring strip to make a frame by glueing it and connecting the pieces with small angle irons at the corners. Roll and bunch the plastic before tacking it into place. Then screw the window to the frame with some newspaper or weather-stripping in between to make it tight.

When winter is over, unscrew the frames and store them in a place where the sun won't hit the plastic. This way, you don't have to rip down the plastic to open the window for summer, and it will last for two or more seasons.





## The Medicine Chest

by T. A. Lincoln, M.D.

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning health in general. Questions are handled in strict confidence, as they are handled in our Question Box. Just address your question to "Medicine Chest," NUCLEAR DIVISION NEWS, Building 9704-2, Stop 20, Y-12, or call the news editor in your plant, and give him or her your question on the telephone.)

**QUESTION:** "I have heard that crops planted near major highways have an elevated lead content. Is it therefore hazardous to plant a family vegetable garden near a driveway where cars park, turn, and idle their engines? If so, what is a safe intervening distance?"

**ANSWER:** Gasoline which contains tetraethyl lead forms compounds with chlorine, bromine and oxygen when burned in an engine. These halide compounds in turn react with various air pollutants, especially sulfur dioxide. Lead sulfate is therefore the primary automotive decomposition product found in soils. Its distribution is obviously influenced by prevailing wind direction. In one study in Colorado on the upwind side of Interstate 25, the lead concentration in the soil dropped from an average of 300 parts per million at the edge of the road to less than 50 parts per million ten feet from the edge. On the downwind side, the lead concentration dropped from over 500 parts per million at roadside to 50 parts per million at ten feet.

Lead compounds deposited in the soil are often not available to the plant because they combine chemically with other compounds in the soil. The acidity of the soil also has a lot to do with the availability of the lead. What is taken into the plant usually remains in the root system. Presumably, therefore, vegetables such as potatoes or turnips could be contaminated. Even so, it must be remembered that gastrointestinal absorption is only about 5 to 15 percent. The remainder is excreted in the feces.

In one study in Canadaigua, N.Y., vegetables grown within 50 feet of the highway contained an average of 115 parts per million. The average lead content of the soil there was 515 parts per million. In several studies it has been shown that vegetables grown near a busy highway have more lead either in the root system on the leaves. Lead deposited on lettuce leaves or on beans can be washed off if the cleansing is thorough.

It is not hazardous to grow a family vegetable garden near a driveway. Surely the total time autos are parked there with their engines running would be small. Next summer, if you plant your vegetable garden and then begin to worry near harvest time, I know one occupational physician and one industrial hygienist who would be happy to dispose of your crop!

**QUESTION:** "I understand lithium is used to treat certain mental

illnesses. How successful is it and are there dangerous side effects?"

**ANSWER:** Lithium carbonate is used to treat patients with a manic depressive reaction. This disease typically begins in the twenties or thirties and its incidence is greatest in individuals who have long been known to have wide swings in their mood. When it begins, it is hard to know whether the patient is just exceptionally enthusiastic and optimistic or is becoming truly hypomanic. As the disease progresses, the individual becomes increasingly verbose and seems to be tireless with overactivity, even though little is accomplished. As the psychosis develops, delusions of grandeur, irritability and anger occur. Often the disorganization becomes so severe hospitalization is necessary. Following the manic episode, or sometimes in the beginning, the patient may be depressed and even suicidal.

Patients entering the hypomanic phase can damage solid professional reputations by their grandiose and somewhat irrational behavior. It is often hard for friends or work associates to know whether the patient is sick or just irritable and hyperactive because of overwork.

### Lithium carbonate used

Lithium carbonate has been found to be especially effective in controlling hypomania and the manic phase, if it occurs. The lithium calms the patient and often controls the acute symptoms within days.

Since lithium is quite toxic, the serum lithium level is monitored closely if a full dose schedule is followed. Toxic symptoms include a fine hand tremor, nausea, thirst and diarrhea. As the lithium accumulates in the brain, the patient may experience a lack of coordination, giddiness and blurred vision. Eventually, seizures may occur and the patient may lapse into a coma. Sometimes toxic symptoms develop rapidly so warning signs have to be looked for continually.

### Abnormal retention

Fairly recently it has been appreciated that frequent determinations of lithium levels in the serum are not enough. Some patients, especially if they are in the manic phase, retain lithium abnormally. They do not excrete it as rapidly as normal. As a consequence, it builds up in the brain even though the serum levels have been normal. A patient who shows toxic signs may

## K-25, ORNL, Y-12 Credit Unions schedule January annual meetings

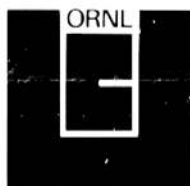
The annual meetings of each of the three Oak Ridge facilities' credit unions will be held later this month, featuring reports on the past year's operation, election of members of the boards of directors and credit committees, and door prizes.



Members of the K-25 Credit Union will meet at 7:30 p.m. Friday, January 23, at the Oak Ridge Civic Center. Two board of directors members and one credit committee member will be elected.

Nominations for the election will be by petition, which precludes nominations from the floor. Petitions, which must be signed by at least 70 members in good standing and 16 years of age or over, were to be filed with the Credit Union secretary by January 8. The nominating committee consists of Hal C. Manley, R. A. Honeycutt and J. A. Sharpe.

The K-25 Credit Union board of directors has again declared a six percent dividend, compounded quarterly. No minimum deposit is required.



Four persons will be elected to the board of directors and three to the credit committee.

Candidates for election to the board include incumbents John

### TIPS FOR COLD ROOMS

Some areas of your house or apartment may be cold spots. This can be true even when other rooms are very warm. Don't turn up the heat; this doesn't help much and it overheats some rooms. Try these other things first:

\*Check to make sure that nothing is blocking the heat in the cold room. Are radiator valves open and is the area around the radiator clear of furniture which might trap heat? If you have a hot air system, be sure the register is not blocked and that the furnace filters are clean.

\*Move furniture away from the outside wall or the windows in the room. It may be more comfortable to sit or work near an inside wall, where it's warmer.

remain that way for several days after the drug has been discontinued.

Lithium is a good example of a highly effective drug with a low margin of safety. It therefore has to be administered with great care and patients have to be followed closely. Patients who are maintained on low levels of lithium to prevent the psychotic phase from developing are at a much lower risk of toxic effects.

Dougherty and Roy F. Pruett (currently president of the board), and Lynda Lewis, Ordean S. Oen, Francis Perey and Harley H. Ross. Credit committee candidates are Darrell Copeland, Joy Huffstetler and Brena Stevens, incumbents, and Robert W. Schaich and Robert L. Smith.

The nominating committee consisted of James C. White, Dick Jernigan, Ruby Miller, Gene Newman and Jim Slice.

A new loan program, the "VIP," will be announced at the meeting. The program is an auto loan plan which will provide conveniences not previously available to members.

The Roberts-ville Junior High School auditorium will be the site of the Y-12 Credit Union's annual meeting, set for 8 p.m. Thursday, January 22. The nominating committee — Harry C. Raley, L.

R. "Dick" Loveless and Paul B. Petretzky — has named four candidates for election. They are Thomas J. Stephens and Jiggs Seivers, board of directors, and Mary Frances Bailey and Paul Wyser, credit committee.

For the first time in the history of the Y-12 Credit Union, members will receive a 10 percent rebate on all interest paid on loans during 1975. The rebate, made possible by an increase in members' borrowing and use of services, was posted to member share accounts on January 4.

As of December 1, the Y-12 Credit Union began paying a six-and-one-half percent dividend on credit union shares from day of deposit to day of withdrawal. This dividend will continue for January.

The Paducah Gaseous Diffusion Plant Credit Union will hold its annual meeting February 15. Details will be forthcoming in the next issue of the News.

## TAT program gives additional impetus to entering program

The Training and Technology program at the Y-12 Plant is entering its tenth year of successful operation. Presently there are 14 sponsors and agencies. Even with that many sponsors, some find they cannot meet the criteria for acceptance in the program.

TAT has made arrangements through the Adult Education Program at the Oak Ridge school system for those desiring to pay their own tuition to be considered for entry into the program.

Anyone desiring additional information on this method of entry should contact Chuck Elder or Jack Fritts, extension 3-5968.

TAT is operated by the Oak Ridge Associated Universities and the Nuclear Division of Union Carbide with the support from the Energy Research and Development Administration.



### Savings Plan—Personal Investment Account

Recent unit values:

|              | Fixed<br>Income Fund | UCC Stock | Equity<br>Investment Fund |
|--------------|----------------------|-----------|---------------------------|
| August 73    | 10.0000              | 34.7688   | 10.0000                   |
| December 73  | 10.2444              | 31.8170   | 9.3602                    |
| December 74  | 11.0438              | 40.3009   | 6.4354                    |
| August 75    | 11.6655              | 59.5430   | 7.7346                    |
| September 75 | 11.7399              | 59.1637   | 7.4316                    |
| October 75   | 11.8238              | 58.2720   | 7.8003                    |
| November 75  | 11.9089              | 58.2039   | 7.9946                    |

Note: Fixed Income Fund unit values reflect interest additions to achieve the guaranteed effective annual interest rate of 8.55% for 1975. Union Carbide stock values are the average cost of stock purchases during the month plus brokerage charges. Equity Investment Fund unit values represent the month-end market value of securities held by the Fund. Dividing the total value by the number of units in the fund establishes the month's unit value — and the price at which new units are added that month.

## Fish impingement

(continued from page one)

warm and the fish are growing. Highest impingement is observed during February and March after a two-month lag from the onset of the cold period. This suggests that threadfin shad may tolerate prolonged exposure to sustained low temperature for several weeks, after which they become highly susceptible to low temperature.

This ongoing research is directed by John S. Griffith, ORNL's Environmental Sciences Division, and David

A. Tomljanovich, TVA's Division of Forestry, Fisheries and Wildlife Development.



# WANTED

### ORNL

RIDE from West Hunter Circle, Oak Ridge to East Portal, 8 to 4:30 shift. Adeeb Makarious, plant phone 3-6481, home phone Oak Ridge 483-0263.

## Paducah sets Quality Assurance emphasis



**QUALITY ASSURANCE WEEK** — The Paducah Plant Quality Assurance Committee includes, seated from left, Manley B. Fortune, Cascade Operations; E. Glen Yates, Purchasing; Marvin S. Lisso, Plant Engineering; Murel E. Schlappbach, Laboratory; Norman F. Windt, Chemicals, Power and Utilities; and Joe C. Taylor, Finance and Materials. Standing from left are Harry A. Johnson Jr., Fabrication and Maintenance; and E. A. (Gene) Waggoner, Quality Assurance Coordinator for PGDP.

### NUCLEAR DIVISION NEWS

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The week of Jan. 12 has been set as Quality Assurance Emphasis Week at the Paducah Gaseous Diffusion Plant.

Although Quality Assurance is a year-round program at the installation, special emphasis will be placed on the subject during the designated week, according to Quality Assurance Coordinator Eugene A. Waggoner. The week will be highlighted by training sessions and additional publicity on the program's objectives.

The fundamental objectives of the Paducah Plant's QA program are (1) to recognize potential significant quality failures; (2) to assure that activities are established that will provide appropriate protection against those quality failures; (3) to evaluate on a continual basis those activities and report the findings to management; and (4) to maintain auditable evidence showing how the program is attaining the listed objectives.

QA program coordinators in each division of the plant assist in carrying out the program.

## QUESTION BOX

(continued from page one)

deposits to any of the credit unions that will permit you to be a member.

**QUESTION:** Since our checks are calculated and printed by computer, would it be possible to add blocks to the check stubs indicating year-to-date dollar amounts for categories as salary, FICA tax, savings plan, etc.?

**ANSWER:** Adding year-to-date amounts to the check stub as you request would involve a significant amount of reprogramming, with additional manual checking in many instances. We do not feel this additional expense can be justified at this time.

**QUESTION:** Often when typing, I have intervals during which I must answer the phone, collate material, etc. For conservation's sake, should the typewriter be turned off each time or not?

**ANSWER:** Yes, it is recommended that typewriters and other office equipment be turned off when not in use. Although the amount of electricity used by one item may be small, savings can be very important if all equipment is turned off when not needed. This is especially true of heating, cooling, and lighting systems.

If all of us follow the installation guidelines for heating, cooling, lighting, and turn off all equipment when it is not needed, we can meet the established energy saving goals and realize significant dollar savings in the process.

We encourage all employees to be as conscientious as you obviously are in energy-related matters.

**QUESTION:** According to Union Carbide's 1974 Annual Report, the

retirement program cost \$87.2 million, and the unfunded pension liability for vested rights was about \$450 million. Can you tell us the size of the unfunded pension liability for current retirees from the Nuclear Division?

**ANSWER:** Union Carbide funds pensions for those employees in the private sector separately from those employees in the Nuclear Division. The reference in the 1974 Annual Report, to which you refer, is in relation to the private sector funding.

When eligible Nuclear Division employees retire, paid-up annuities are purchased with monies from the UCCND Pension Fund. Therefore, paid-up annuities have been purchased for all current UCCND retirees and there is no unfunded liability in connection with their pensions. The normal payment made into the UCCND Pension Fund for 1974 was \$20.4 million, bringing the total value of the fund on December 31, 1974, to approximately \$202 million, which was more than adequate to purchase fully paid-up annuities for all employees who were entitled to pension benefits at that time.

**QUESTION:** The security fence across from the building where I work is being raised by three feet. Meanwhile, janitors are being laid off and this place is dirty. Are our priorities in order?

**ANSWER:** The height of the security fence separating Y-12 and ORNL activities at the Y-12 Plant has been raised to satisfy current security requirements. There is no correlation between security fences and the number or functions of the janitorial staff.



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